Remarks

1. Introduction. This paper is submitted in response to the Office Action mailed August 16, 2006. In this non-final action, claims 20-30 are pending. Claims 20, 27 were rejected as allegedly anticipated by Grob (US 5,761,204). Applicant respectfully traverses the rejections for the reasons explained below and requests reconsideration. Claims 21-22, 27 and 30 were rejected as unpatentable over Grob in view of Pommerening (US 3,742,197). Applicant respectfully traverses these rejections as well and requests reconsideration. Finally, claims 23-26, 28 and 29 were objected to as being dependent upon a rejected base claim but indicated allowable if rewritten in independent form with appropriate limitations included. These claims are now allowable in view of the current amendments to claims 23 and 28. No new claims are added.

2. Claim 20

The Examiner points out various elements in Grob alleged to correspond to the limitations of claim 20. However, the Examiner did not address certain important limitations. The MPEP provides, in pertinent part: "for anticipation under **35 U.S.C. 102**, the reference must teach every aspect of the claimed invention either explicitly or impliedly." (MPEP 706.02 IV, emphasis added.) Claim 20 is directed to a "cellular telephone" and it requires –

> "an inband signaling modem that converts a digital bit stream into synthesized tones and outputs the synthesized tones to the voice coder, the voice coder encoding the synthesized tone in the same manner as the electrical voice signals before being transmitted over the digital voice channel."

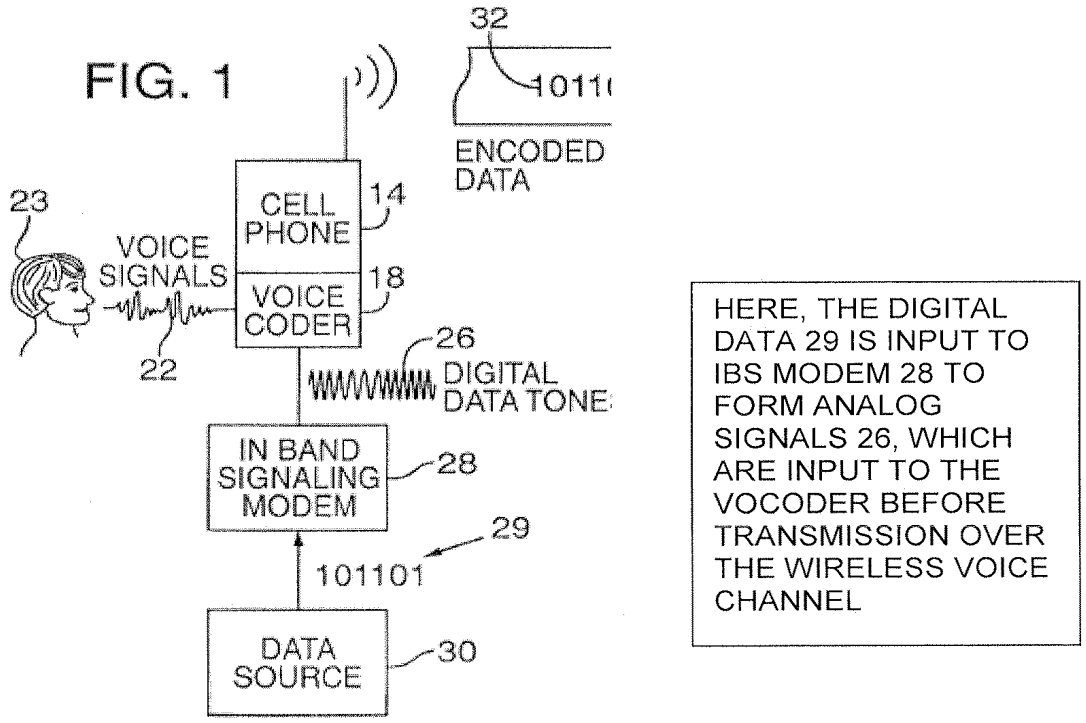
Regarding the first part of the claim limitation ("an inband signaling modem that converts a digital bit stream into synthesized tones"), the Examiner cited to Grob 1:23-25, which says, "a FAX machine uses a modem to translate digital information to audible analog tones for transmission over the telephone network." That much is true, for conventional analog landlines, but Grob also points out a problem addressed by the cell phone of claim 20, and that is:

> "If the end user attempts to send the audible tones produced by a modem over a standard digital wireless channel, it is also doubtful that he will be successful. Digital wireless communication equipment typically uses vocoders to convert incoming voice signals into digital

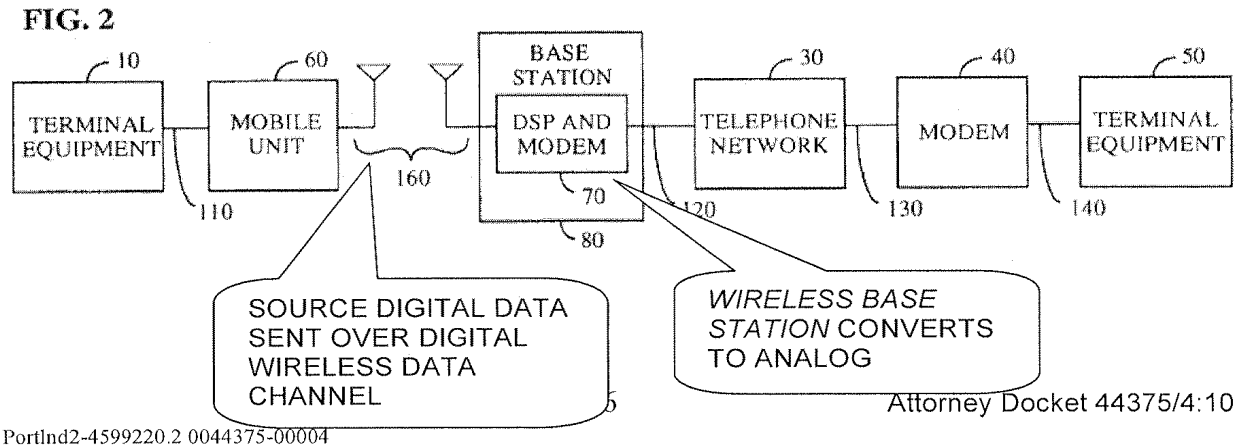
bits for transmission over the channel. Vocoders are tailored to sample and compress human voice. Because modem tones differ significantly from human voice, the vocoder can cause noticeable degradation to the modem tones." (Grob at 1:44-51.)

Grob thus *teaches away* from the invention of claim 20, as it further calls for: "an inband signaling modem that … outputs the synthesized tones to the voice coder, the voice coder encoding the synthesized tone in the same manner as the electrical voice signals before being transmitted over the digital voice channel."

This solution is illustrated in one embodiment in FIG. 1 (remarks in box added):



The Examiner also stated that, "Grob discloses 'modem 40 converts audible signal 130 to digital data 140', refer to col. 3 lines 4-6." Below is the corresponding figure from Grob (with bubble captions added):



In Grob, the source digital data 110 is sent via the wireless unit 60 over a digital data channel, *not a voice channel.* Grob expressly teaches away from using the voice channel for data communication: "A more efficient, flexible, and reliable transmission means is to provide a mechanism to transmit the digital data over the digital wireless link directly. This configuration presents some unique opportunities to take advantage of the digital link to provide high quality service." (Grob at 1:58-62, emphasis added.) Applicant's claim, by contrast, calls for [outputting] the synthesized tones to the voice coder, the voice coder encoding the synthesized tone in the same manner as the electrical voice signals before being transmitted over the digital voice channel."

Moreover, in Grob, the DSP and modem 70 that convert data to tones are in the mobile base station 80, not in the cell phone 60. See FIG. 2 above. The modem 40 cited by the Examiner is located at the receiving end of the landline telephone network, where it converts audio tones (e.g., FAX) back into data, as is conventional. In any event, Grob does not disclose what claim 20 recites. Claim 20 creates tones to represent data, and then puts them into the vocoder, for transmission over the voice channel of the digital wireless network.

The practical difference between these two approaches is huge. According to applicant's invention, a common digital cell phone can be used for data transmission, via the voice channel of the digital wireless telecom network, in some cases with only software changes. According to the Grob approach, many thousands of base stations have to be changed, indeed the whole wireless network – a prohibitively expensive and impractical solution for the carriers, especially because the result is a low-bandwidth data channel in any event. Applicant teaches using the voice channel, rather than a dedicated data channel, because voice service is reliable and available virtually everywhere, while data services are not. And also because Applicant's invention does NOT require changing the wireless telecommunications network. For these reasons, Grob does not anticipate claim 20 and the rejection should be reconsidered and withdrawn.

Claim 27.

The Examiner also listed claim 27 as anticipated by Grob, but did not discuss this ground for rejection. Claim 27 was rejected under Section 103, and that ground for rejection was discussed, so the rejection of claim 27 under Section 102 is

assumed to be inadvertent or to have been reconsidered and withdrawn in favor of the obviousness rejection, discussed below.

3. Claims 21-22, 27 and 30 were rejected as unpatentable over Grob in view of Pommerening (US 3,742,197). Applicant respectfully traverses these rejections as well and requests reconsideration. Claim 21 depends from claim 20 and at least for the reasons stated above it should be allowed. In addition, claim 21 is independently patentable over the art cited. It recites:

"21. (Original) A cellular telephone according to claim 20 including a digital to analog converter coupled between the inband signaling modem and the analog to digital converter."

One example of an illustrative embodiment is shown in FIG. 3. See D/A converter **54** coupled between the inband signaling ("IBS") encoder **52** and the A/D **16**.

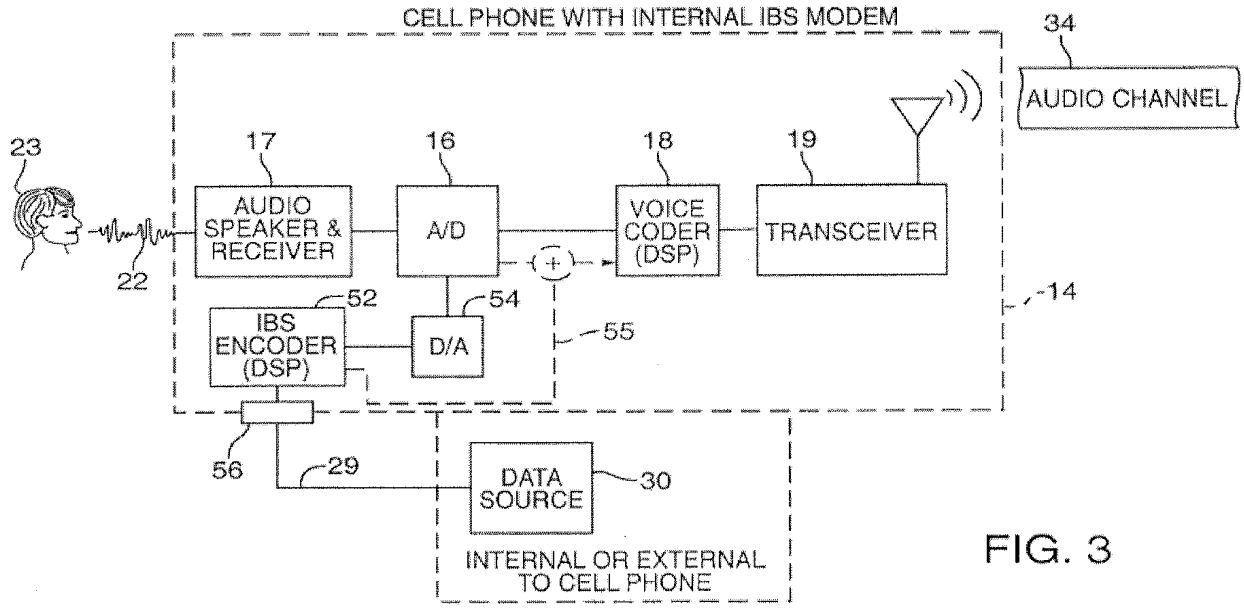


FIG. 3

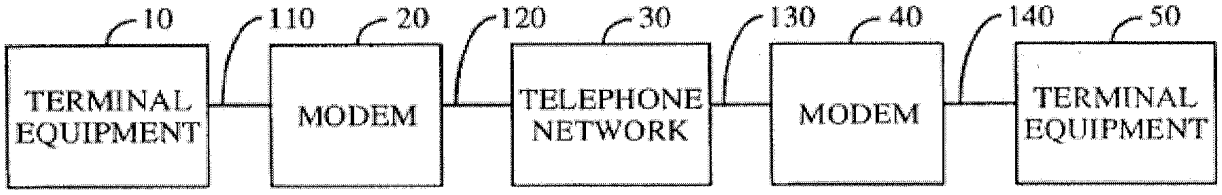
Regarding claim 21, the Examiner cites to Grob at 2:65-3:6. That text says:

> "Terminal equipment 10 produces digital data 110 representative of the information. Modem 20 converts digital data 110 to analog signal 120. Analog signal 120 is of a proper bandwidth and power level to be transferable over standard telephone network 30. Telephone network 30 conveys analog signal 120 to its destination. The telephone network may introduce noise such that output audible signal 130 is an estimate

of analog signal 120. Modem 40 converts audible signal 130 to digital data 140 which is an estimate of digital data 110."

That passage does not describe the limitation of Applicant's claim. Referring to the drawing FIG. 1 in Grob, it shows a conventional arrangement for using "terminal equipment" such as a traditional FAX machine over the legacy analog landline telephone network. The present invention, by contrast, is concerned with the digital wireless network.

FIG. 1



In essence, the Examiner posits that Modem 40 has an A/D converter – which Applicant readily concedes. The Examiner continued, "along with modem 20 including D/A," and Applicant also admits that Modem 20 would have a D/A. But Applicant's claim 20 calls for a cell phone in which "a digital to analog converter [is] coupled between the inband signaling modem and the analog to digital converter." Grob does not disclose or suggest this structure. And the differences are no "mere design choice" as the Examiner suggests. The modem 40 and the modem 20 disclosed by Grob are at opposite ends of the analog telephone network. The Examiner has not shown why it would have been obvious at the time the present invention was made to modify Grob (with or without reference to Pommerening) to form the invention described by claim 21. The Examiner has not shown what changes would be required, or why an artisan would have been motivated to make them. For these reasons, it is respectfully submitted that the Examiner has not made out a *prima facie* showing of obviousness of claims 21, 22, 27 or 30 over the prior art.

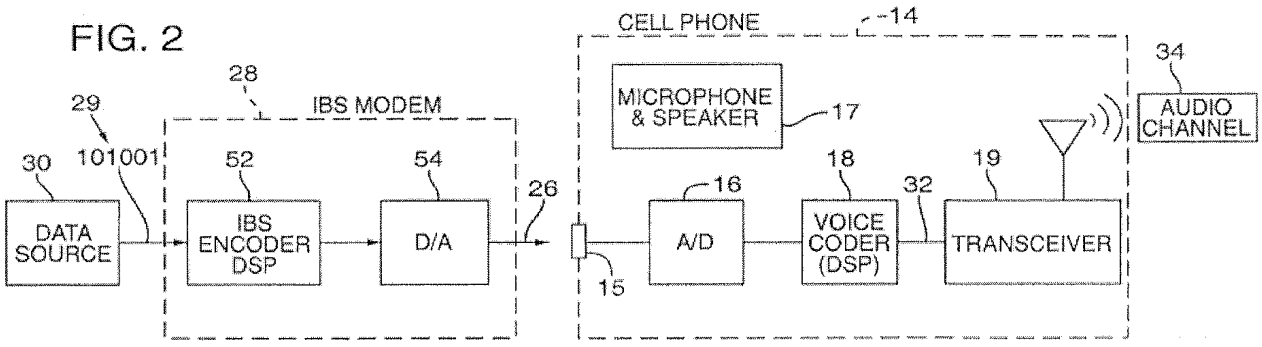
To the contrary, Grob actually teaches away here as well, because Applicant teaches methods and apparatus for sending data through the voice channel ("in-band") so that the digital wireless network (base stations, etc.) can be used without modification. Grob teaches the opposite: modifying the network in order to make it compatible with legacy equipment like a FAX machine. For these additional reasons, with all due respect, the Examiner has not made out a *prima facie* showing

of obviousness of claims 21, 22, 27 or 30 over the prior art and the rejections should be withdrawn.

Claim 22.

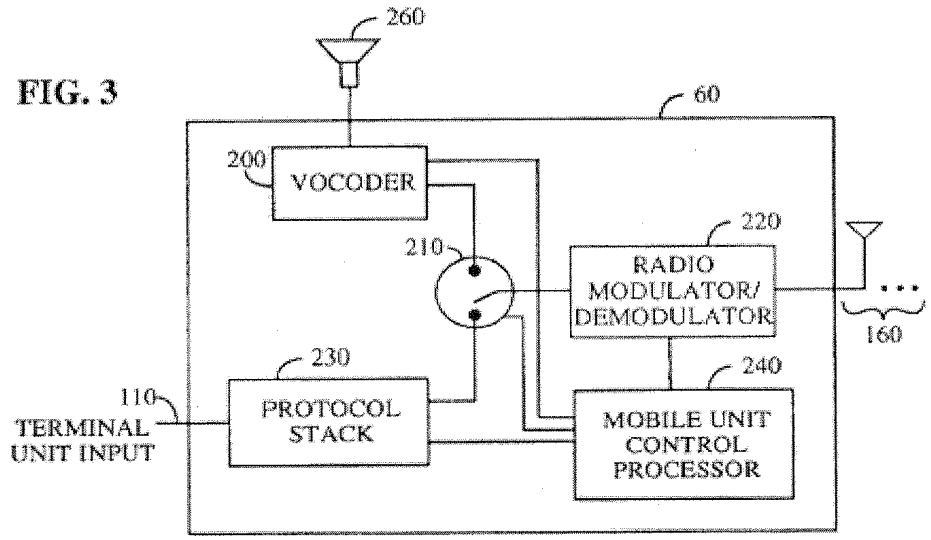
Regarding claim 22, it recites: "22. A cellular telephone according to claim 21 wherein the inband signaling modem and the digital to analog converter are located in a device detachably coupled to the cellular telephone." An illustrative embodiment was shown in Applicant's FIG. 2:

FIG. 2



The Examiner cited to a "D/A converter located in modem 20" in Grob. Applicant acknowledged above that a conventional modem 20 apparently would include a D/A converter, but the conventional modem 20 in Grob is not an "inband signaling" or "IBS" modem as claimed by Applicant. Regardless of whether the IBS modem is external (Fig. 2) or built into the cell phone (Fig. 3), the encoded data tones are input to the vocoder **18** for transmission over the voice channel of the digital wireless network. Grob uses a *data channel* for data, as illustrated in Fig. 3 of Grob. There, switch 210 directs the data from a protocol stack 230 to the radio 220 and NOT to the vocoder 200; it is only used for voice:

FIG. 3



Grob explained:

> "In FIG. 3, digital data 110 is connected to protocol stack 230 within mobile unit 60. Protocol stack 230 is capable of bi-directional communication with terminal equipment 10, mobile unit control processor 240 and radio modulator/demodulator 220. When protocol stack 230 receives digital data 110 for transmission over wireless link 160, it provides any required encoding and passes the encoded information to radio modulator/demodulator 220 through switch 210. Radio modulator/demodulator 220 modulates the encoded information and provides the signal for transmission to wireless link 160. Inversely, when a signal containing information for terminal equipment 10 arrives, radio modulator/demodulator 220 demodulates the signal and provides it to protocol stack 230 through switch 210.
> ***
> "Likewise when vocoder 200 receives analog information from speaker/microphone 260 for transmission over wireless link 160, it encodes the information and passes the encoded information to radio modulator/demodulator 220 through switch 210." (Grob at 3:65-4:17.)

Claim 27.

Regarding claim 27, the Examiner cites again to Grob as disclosing that "a modem 40 converts audible signal 130 to digital data 140."[1] As explained above, the modem 40 cited by the Examiner is located at the receiving end of the landline telephone network, where it converts audio tones (e.g., FAX) back into data, as is conventional. This does not disclose or suggest the subject matter of Applicant's claim 27, which is directed, as noted, to, "a cellular telephone according to claim 20 including a decoder (16) coupled to the voice coder for detecting and decoding synthesized tones received over the digital voice channel." The conventional FAX uses an analog voice channel –over a landline.

Claims 23-26, 28 and 29 were objected to as being dependent upon a rejected base claim but indicated allowable if rewritten in independent form with appropriate limitations included. Claim 23 is so amended. Accordingly, claims 23-26 are now in condition for allowance. Claim 28 also is rewritten in independent form with appropriate limitations included, so claims 28-29 should now be allowed.

---

[1] Again, the asserted grounds for rejection is not clear. The rejection is listed on page 4 as being under Section 103, but there is no mention of how the Examiner would apply the secondary reference Pommerening. Accordingly, the Examiner has not made out a *prima facie* showing of obviousness.

Claim 30 is independently patentable. It calls for:

> "A cellular telephone according to claim 20 wherein the synthesized tones are generated at a first audible frequency to represent binary "1" values and at a second audible frequency to represent binary "0" values, the first and second frequencies being about 100 Hertz apart, each extending for a duration of about 10 milliseconds and generated as one continuous signal."

The present Applicant discovered the recited parameters as being especially efficacious for the intended purpose. Pommerening does not disclose, for example, the 100 Hz. spread between the two audio frequencies. The Examiner has not made a *prima facie* showing of anything that would render the claim obvious to one of ordinary skill in the art at time the invention was made. For the foregoing reasons, with all due respect, the Examiner has not made out a *prima facie* showing of obviousness of claims 21, 22, 27 or 30 over the prior art and the rejections should be withdrawn.

In view of the foregoing amendments and remarks, the application should now be in condition for allowance. Please contact the undersigned if any issues remain.

Respectfully submitted,
Airbiquity, Inc.

/Micah D. Stolowitz/
By _____
Micah D. Stolowitz
Registration No. 32,758

STOEL RIVES LLP
900 SW Fifth Avenue, Suite 2600
Portland, OR 97204-1268
Telephone: (503) 224-3380
Facsimile: (503) 220-2480
Attorney Docket No. 44375/4:10